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## SECTOR 13 —CHART INFORMATION

## SECTOR 13

### ISLANDS IN THE SOUTH INDIAN OCEAN—THE PRINCE EDWARD ISLANDS TO ILE SAINT-PAUL AND ILE AMSTERDAM

**Plan.**—This sector describes the islands in the S part of the Indian Ocean, including the Prince Edward Islands, Iles, Crozet, Iles Kerguelen, Ile Saint-Paul, and Ile Amsterdam.

#### Prince Edward Islands

**13.1** The **Prince Edward Islands** (46° 46'S., 37° 47'E.) are a pair of islands which are the twin peaks of a sunken volcano. The two islands are Marion Island, the northernmost, and Prince Edward Island.

**Marion Island** (46° 53'S., 37° 43'E.), the larger of the two Prince Edward Islands, appears from the N as a cluster of ragged nipples, with one table-topped peak slightly higher than the boot. The slopes of the island are broken by numerous volcanic cones, some with the red volcanic ash still showing near the summits. The sides of the hills are thickly studded with lava boulders, rising above the vegetation of rank, boggy moss.

**Cape Crozier** (46° 57'S., 37° 35'E.), the W extremity of Marion Island, lies about 2.3 miles NW of Vrystaat Point; when seen from the W it appears as a low, dark-colored point against the lighter background.

**13.2** **Cape Hooker** (46° 59'S., 37° 50'E.), the SE extremity of Marion Island, lies about 10 miles E of Cape Crozier. It is a flattish ledge about 61m high. A very conspicuous hummock rises about 2 miles N of Cape Hooker. Marion Island rises to an elevation of 1,230m near its W central part, with another similar elevation about 0.8 mile ENE.

**Ships Cove** (46° 51'S., 37° 50'E.) indents the N shore of Marion Island, about 5 miles ESE of Boot Rock. Anchorage can be obtained about 0.3 mile offshore, in a depth of 29m.

There is a passage 11 miles wide between Marion Island and Prince Edward Island, which are under the sovereignty of the Republic of South Africa.

A vessel found temporary anchorage, in 38m, 1 mile W of Aldebert Reef (Solglimt Blinders) (40° 51'S., 37° 52'E.), and 0.5 mile offshore, with Boot Rock bearing 289°, about 5.1 miles distant, rocky bottom. Strong currents were observed at this anchorage.

**Transvaal Cove** (46° 52'S., 37° 51'E.) is about 0.7 mile S of Duiker's Point. At the N end of the cove is the meteorological station, consisting of 14 white and silver buildings, one of which has a conspicuous roof painted in black and white checks. The station is well-lit at night.

**Anchorage.**—Anchorage can be found in a depth from 46 to 55m, with good holding ground, but a vessel should put to sea should pressure fall with a veering wind.

**Directions.**—If approaching Marion Island from the NW, steer SE to pass between the islands and to pass at least 2 miles N of Solglimt Blinders; this reef may not break in very calm conditions. When East Cape bears 180°, alter course to 180°; Solglimt Blinders will be cleared by 1.5 miles. Then approach

the anchorage on a course of 249°, with McMurray's Kop, a prominent volcanic cone which may be snow-covered in winter, ahead and in line with the Ballon Tower. The anchorage, in a depth of 32m, about 0.3 mile offshore and clear of kelp, is reached when about 1.8 miles ENE of McMurray's Kop summit.

**13.3** **Prince Edward Island** (46° 38'S., 37° 56'E.) lies 11 miles NNE of Marion Island. When sighted from the W, this island presents a rounded summit, 672m high, with the land sloping gradually to South Cape, but more abruptly N. On the N extremity is a wedge-shaped peak, which appears from a distance to be detached from the island. This peak is slightly higher than Ross Rocks, a number of rocky islets which lie within 0.5 mile N of this extremity and show up very dark against the land.

Ship Rock, 197m high, stands close off the N extremity of the island.

The W and SW coasts of the island are precipitous. Within the SW point is a precipitous cliff, rising to an elevation of 457m within 0.3 mile of the sea. On the E side of the island is Cave Bay, which was formerly used by sealers as a temporary anchorage in depths of 18m.

Landing can usually be made in Cave Bay when the wind is between the S and NNE through W; the best landing place is in the center of the beach with anchorage available, in a depth of 27m, about 0.3 mile offshore. There is a 14m shoal lying 1.5 miles E of East Cape, close S of Cave Bay.

#### Iles Crozet

**13.4** Iles Crozet lie between the parallels of 45° 57'S and 46° 30'S, and between the meridians of 50° 10'E and 52° 20'E.

The archipelago is composed of two groups of volcanic islands about 50 miles apart. The W group consists of one main island, Ile aux Cochons, and two small islets, Iles des Apotres and Iles des Pingouins. The E group consists of Ile de la Possession and Ile de l'Est. Ile aux Cochons first appears to observers approaching from the N as a number of peaks.

The islands have been under French sovereignty since 1924.

**Tides—Currents.**—In passing through the channel between Ile aux Cochons and Iles des Apotres, a current setting toward the rocks and breakers off the W side of the latter islands must be guarded against.

**Caution.**—Many sunken dangers, not always charted, exist in the vicinity of these islands.

**Cap Verdoyant** (46° 05'S., 50° 16'E.), a useful mark, projects from the middle part of the E shore of Ile aux Cochons and is the E extremity of the island. A conspicuous rock S of the cape appears as a truncated cone.

**Anchorage.**—The anchorages are off the E shore of Ile aux Cochons and are consequently exposed to E winds. Such

winds, said to be an infallible sign of bad weather, are infrequent, but when they do blow, they acquire such force as to jeopardize vessels at anchor; vessels must hasten seaward at the first sign of these E winds.

The anchorages can be approached by rounding either the N or S end of Ile aux Cochons.

Anchorage can be taken in Mouillage de la Meurthe off the entrance of Tournyol du Clos, close S of Cap Verdoyant, in a position with the right fall of the cape bearing 284°, distant about 0.4 mile. The depth is 30m and the bottom is rock, with a thin layer of black sand.

Anchorage can also be taken off the entrance of Crique Loniewsky, in a depth of 24m, black mud, with Les Cinq Geants bearing 315°, distance about 0.6 mile.

**13.5 Iles des Apotres** (45° 36'S., 50° 25'E.) consists of Grand Ile, Petite Ile, Ile Donjon, and nine pinnacle rocks. The nine pinnacle rocks are from 15 to 122m high; the southernmost is perforated.

**Iles des Pingouins** (46° 28'S., 50° 20'E.) lie 18 miles SSE of Ile aux Cochons. The principal island is composed of barren, volcanic rock; it is 360m high and quite inaccessible. The cliffs on the N and W sides of the island resemble the vertical walls of a fortress.

Rocher de l'Arche, 76m high and connected to the NW extremity of Iles des Pingouins by a low isthmus, appears to be separate from that island.

Submerged rocks, on which the sea breaks heavily, extend 1.5 miles SE from Iles des Pingouins. A submerged rock, the position of which is doubtful, has been reported to lie 3.5 miles ESE of Iles des Pingouins.

**Caution.**—Iles des Pingouins has been reported (1988) to lie 2 miles N of its charted position.

**13.6 Cap Vertical** (46° 21'S., 51° 41'E.), the N extremity of Ile de la Possession, is conspicuous. Cap de la Heroine is the W extremity of the island and breakers exist 2 miles offshore SW of Cap de la Heroine.

A conspicuous high perforated rock lies off the NW shore of the island, about 1 mile N of Pointe des Moines, the W extremity of Ile de la Possession. Vessels approaching the island from the W during fog can identify the high perforated rock before the island itself can be made out.

Baie du Marin is a wide bight in the SE shore of Ile de la Possession; it is open to the SE, but offers shelter from winds between the SSW and NNW. Baie du Navire is a recess at the head of Baie du Marin.

**Anchorage.**—Anchorage can be taken in Baie du Marin and, by smaller vessels, in Baie du Navire. The outer anchorage, in 40m, is marked by the intersection of two lighted ranges. Baie Americaine is a semicircular indentation in the NE shore of Ile de la Possession. Anchorage can be taken in the bay without difficulty. The bay is entered, and an anchorage site selected, by keeping midway between the kelp on either side. A vessel will be in depths of 9m or more as close as 0.3 mile from the head of the bay. The recommended position is in 22m, sand and shell, good holding ground, with Rechecker la Armadillo bearing 017°, distant 0.2 mile.

**Caution.**—East winds are rare, but they are a sure sign of bad weather. Vessels should put to sea at the first indication of such winds.

**13.7 Ile de l'Est** (46° 25'S., 52° 08'E.) is a mass of precipitous volcanic mountains, with jagged summits, rising in a succession of cliffs to an elevation of 1,090m at Mont Marion-Dufresne, a snow-covered peak.

The SW extremity of Ile de l'Est terminates in a high rock in the form of a triangular pyramid. Depths of 20 to 24m are found 1.4 and 2.4 miles SE, respectively, of this point.

On the S side of the island are high red cliffs and broad steams of lava. Three rocks, 2 to 3 miles apart, lie from 0.1 to 0.3 mile off the S coast. The sea breaks furiously on every part of the W and S sides.

Temporary anchorage can be taken, in 24 to 27m, off the N and NE shores of Ile de l'Est, which, from the appearance of the vegetation growing close to the water's edge, can seldom be washed by heavy seas. The temporary anchorage must be approached with caution because of off-lying irregular, unexplored depths.

On the N side of the island, temporary anchorage is also possible in 35m, 0.5 mile from the coast, at the opening of Baie du Naufrage (Baie de l'Aventure) (46° 23'S., 52° 12'E.).

## Iles Kerguelen

**13.8 Iles Kerguelen**, including all off-lying dangers, lie between the parallels of 48° 27'S and 50° 00'S, and the meridians of 68° 25'E and 70° 35'E. There are more than 300 islands and islets in the whole archipelago, which is under the administration of the French Government. When viewed from the sea at a distance, the islands present a remarkable jagged outline of sharp peaks, which is most striking when observed from the S.

**Tides—Curr ents.**—The ocean current immediately around Iles Kerguelen is generally affected by the wind or the aftereffect of the wind. The tidal currents are appreciably felt, in some places setting strongly against the wind.

**Caution.**—Icebergs, some of them large and dangerous, have been seen in the vicinity of Iles Kerguelen.

**13.9 Mont Campbell** (49° 04'S., 70° 19'E.) is a useful mark by reason of its truncated conical appearance; it rises from a low, marshy plain, and is unmistakable. Mont Peeper (49° 12'S., 70° 25'E.) and Mont Bungay (49° 19'S., 70° 26'E.) rise from the same plain; they, like Mont Campbell, are conspicuous from the E. These comparatively low hills are often visible when the high masses inland of them are enveloped in fog.

**Ilôt du Rendez-Vous** (48° 27'S., 68° 48'E.) lies in the approach to Iles Kerguelen from the NW in position; it is a useful landfall mark.

Ile Roland lies nearly 6 miles S of Ilôt du Rendez-Vous. Crique Esnault is an indentation on the E side of Ile Roland. Indifferent anchorage may be obtained, in 18m, over a bottom of sand, in Crique Esnault.

Ile de Croy lies about 5 miles WSW of Ile Roland. A cove where small vessels might anchor indents the SE shore of Ile de Croy.

Baie de l'Oiseau is entered between Cap Francais (48° 40'S., 69° 04'E.) and Pointe de l'Arche, about 1 mile SSE. The flood tidal current sets NW off the entrance. Table Mount, the highest hill on the N side of Baie de l'Oiseau, is 411m high, and a useful mark.

Mont Havergal rises to a height of 551m on the S side of the bay; it is conspicuous from the NE. Mont Havergal is a huge, imposing mass of blackish rock, resembling a human head from some directions, and towering conspicuously above the other summits nearby.

**Anchorage.**—Anchorage can be taken in Baie de l'Oiseau. The area available for anchoring is about 1 mile long and has depths of 10.9 to 28m. The bottom is fine black sand except toward the shore, off which in places are kelp-covered rocks. A good berth is in 16m, about 0.3 mile from the head of the bay, which is marked by a level beach of fine black sand.

The recommended position is near a rivulet and a cascade. Good ground tackle is required as squalls from the W rush down the valley at the head of the bay with tremendous force. Changes of weather are sudden.

Baie de la Dauphine is entered between Pointe de l'Arche and Cap Ligneville, about 1.5 miles S. Anchorage, considered safe and good, in 33m can be taken at the head of the bay. The mud bottom is good holding ground. The kelp must be avoided and NE wind raise a considerable swell.

**13.10 Baie Clemenceau** (48° 44'S., 69° 03'E.), extending about 5.5 miles SW, is entered between Cap Ligneville and Pointe d'Anieres, about 2.3 miles ESE. Good anchorage, in 20m, can be taken at the head of Baie Clemenceau. As in the case of Baie de la Dauphine, NE winds raise a considerable sea.

Baie de Recques is entered between Pointe d'Anieres and Pointe Pringle (Pointe des Roches), about 2.8 miles SE.

Ile Guerite lies about 0.5 mile E of Pointe d'Anieres. A rock resembling a sentry box stands on its summit.

A rocky patch, marked by kelp, lies in the middle of the entrance of Baie de Recques. The recommended channel leading into the bay passes S of the rocky patch.

Anse du Jardill is entered on the SE side of Baie de Recques, between Pointe Cristal, 6 miles SW of Pointe d'Anieres, and a point 0.5 mile farther SW; then it extends in a S direction for 2 miles. An islet, fringed by foul ground, lies close offshore, 0.5 mile SW of the SW entrance point.

Pointe du Museum lies about 4.3 miles SW of Pointe Cristal, where Baie de Recques divides into two arms; Port Edmond Perrier is the W arm and Anse de l'Excursion is the E arm.

The anchorages in Baie de Recques are much better than that in Baie de l'Oiseau and are not exposed to such violent winds. They are, however, not so easy of access.

Safe anchorage can be obtained in Anse du Jardin, in 25m, good holding ground, with the entrance points almost in line bearing 000°, a waterfall on the W side bearing 252°, and a point on the E side, resembling an islet, bearing 037°.

**Anchorage.**—Anchorage can be obtained in 20m, mud, 0.3 mile N of Pointe du Museum. Port Edmond Perrier affords good anchorage to small vessels in 20m, 0.8 mile SW of Pointe du Museum.

Baie du Brise-Lames is entered between Cap Ferron, about 1.5 miles SSE of Pointe Pringle, and Pointe Lucky, about 2.3

miles SSW. Ilot Cezembre lies close off the SE shore in a position about 2 miles from Pointe Lucky. Good anchorage can be taken in Baie du Brise-Lames, in 30m, somewhat less than 1 mile W of Ilot Cezembre.

**13.11 Baie Blanche** (48° 49'S., 69° 11'E.), which contains several good harbors, is entered between Pointe Lucky and Pointe Cox. Baie Caille is a recess in the NW shore of Baie Blanche lying about 4.8 miles from Pointe Lucky. It is preferable to anchor, in 18m, on the S side of the bay rather than on the N side, where the depths decrease rapidly. Baie du Phoque is a recess in the NW shore of Baie Blanche lying close SW of Baie Caille. Anchorage is available, in 13 to 18m.

**Anchorage.**—Anchorage can be obtained, in 18m, in Port Matha at the head of Baie Blanche, 0.3 mile W of Pointe Maunoir, the N entrance point.

Baie du Repos, SSW of Baie Blanche, is reported by sealers to afford good anchorage.

**Roches Glass** (48° 4'S., 69° 40'E.) is a chain of black islets which stand out clearly, even in misty weather.

**13.12 Ile Howe** (48° 50'S., 69° 25'E.) lies with its N extremity about 8 miles WSW of Roches Glass. The shores of Ile Howe appear to vessels approaching from the N as light-colored cliffs, pale yellow or brown. Iles Dayman lies about 2 miles ENE of the NE extremity of Ile Howe. Port Fuller, an area along the E shore of Ile Howe, affords secure anchorage from the prevailing W winds. Depths of 27m are available.

Port Fallieres is a small harbor formed between the SW shore of Ile Howe and the NE shore of Ile McMurdo; it can be entered without difficulty from the W, but not from the E. Well-sheltered anchorage can be taken in 20m.

Baie Rhodes is entered between Pointe Oakeley (48° 51'S., 69° 30'E.) and Cap Neumayer. Russia Bird is difficult to distinguish; it should not be approached within 0.2 mile of its E side. The safest approach to Baie Rhodes from the NE is between Roches Glass and Roche Bird. The approach S of Roche Bird is obstructed by kelp, which may cover shoal patches.

**13.13 Port Mary** (49° 00'S., 69° 19'E.) lies on the W side of Baie Rhodes, about 7.5 miles within the entrance. The harbor is backed by hills from which, during gales, heavy squalls blow first from one direction and then from another. The best anchorage is in 11m, soft mud bottom, in the middle of the harbor. A vessel of deep draft entering the harbor should keep close to the N entrance point and to the N side in order to avoid a patch, with a depth of 7.3m, amongst the kelp.

**Port Credner** (49° 02'S., 69° 17'E.), entered 1.5 miles S of Port Mary, is suitable for small vessels. The entrance lies N of an island which fronts the anchorage at which there are depths of 18m.

**Port Helene** (49° 04'S., 69° 16'E.) is entered 2.5 miles S of the entrance of Port Credner. The harbor is easy to access and affords good anchorage in 25m. The harbor is subject to squalls during W winds.

Baie d'Orvilliers is entered between Pointe St. Vincent de Paul and Pointe Bassuet, 0.5 mile to the NE, and affords anchorage to small vessels, in 17m. Large vessels can anchor, in 35m, in the entrance of Port Jules Girard, with Pointe

Rogheneuf bearing 007°, the E extremity of Ile Bethel bearing 012°, Pointe St. Vincent de Paul bearing 217°, and Pointe Bossuet bearing 162°.

Mont Palliser rises near Cap Neumayer (48° 57'S., 69° 34'E.); from some directions its summit appears table-shaped.

Port Sunday (Port Dimanche) is entered 2.5 miles S of Cap Neumayer. The best anchorage is about 0.5 mile from the head of the harbor, in 20m. The anchorage at Port Sunday is subject to heavy W squalls, and it has never been used much. Port Cook, on the N side of Port Sunday near the entrance, is reported to be easy to access, in spite of the rocks off its entrance. It affords much better anchorage than that in Port Sunday, in 9 to 13m.

**13.14 Anse Pingouin** (48° 59'S., 69° 38'E.) affords shelter from the prevailing W winds, in 14m, but the bank suitable for anchorage is rather steeply shelving. Should E winds set in, a vessel can easily run to Port Palliser, SW. The cove can be approached by way of the channel between Pointe de Langle (48° 58'S., 69° 39'E.) and Rochers Frossard, but the best approach is from the E, passing between Ilots Bobzien and Ile Francis.

**Anchorage.**—Anchorage can be obtained, in 25m, with the N extremity of Ilots Bobzien bearing 067°, and the S extremity of the islets bearing 117° and just obscuring the small Ile Francis. Port Palliser, the head of Anse Pingouin, affords excellent anchorage W of an islet off the S side of the harbor. The bottom is sand, except under the kelp.

Port du Milieu and Baie des Astronomes are entered within a distance of 2 miles S of Anse Pingouin. Both Port du Milieu and Baie des Astronomes afford good anchorage, but a reef of rocks extends completely across Port du Milieu 0.5 mile within its entrance, and there are numerous islets and some foul ground at the head of Baie des Astronomes. They should both be approached by way of the channel between Ilots Bobzien and Ile Francis.

**13.15 Port Roland Bonaparte** (49° 02'S., 69° 39'E.) consists of the narrow channel lying between Ile Maroon and the mainland S. The fairway N of the foul ground, extending from the S side of the E entrance, has depths of 15m. A shoal, with a least depth of 1.8m, lies 0.2 mile off the S side of the harbor 0.9 mile within its E entrance.

**Anchorage.**—Anchorage can be obtained by small vessels in 8 to 10m, near the middle of the harbor, 0.5 mile within the E entrance.

**Baie du Hopeful** (49° 05'S., 69° 34'E.) is entered about 3 miles SSW of Port Roland Bonaparte; it is one of the best shelters in Iles Kerguelen.

**Anchorage.**—Anchorage can be taken in 18m, in Mouillage Bon Abri, at the head of Baie du Hopeful. Anchorage can also be taken in 20m, close off Cascade de la Lozere, by laying out hawsers to iron moorings secured in the rock. This position is well-sheltered from the N and W winds, but is exposed S.

**Baie le Verrier** (49° 07'S., 69° 34'E.), entered between Pointe Araud and Ile Violette, 0.5 mile S, is similar to Baie du Hopeful in shape and direction, but anchorage can only be obtained near its head, where there is a narrow, steep-to bank,

with a depth of 8.8m, the remainder being too deep. Both Baie du Hopeful and Baie le Verrier are fronted by banks of kelp, through which a vessel should pick the way where it is thinnest.

Golfe des Baleiniers is the extensive area between Presqu'île Joffre and Presqu'île Courbet.

It is advisable when proceeding into the inner part of Golfe des Baleiniers, either to keep close to Presqu'île Joffre or else to pass S of Roche du Chenal (49° 08'S., 69° 45'E.). A mid-channel course can then be followed through Chenal Clery in deep water to avoid the foul ground off some of the projections on the S shore of Presqu'île Joffre.

**13.16 Ile Henry** (49° 06'S., 69° 42'E.) is flat-topped and is precipitous on all sides, easily identified, and a useful mark for the inner part of Baie des Baleiniers.

Baie du Yacht Club is a narrow inlet leading off the S part of Baie de la Baleine. The entrance to the bay is very constricted by the rocks projecting from the SE point of the entrance. In the approach channel, which is about 200m wide, depths vary from 13 to 31m.

**Anchorage.**—Anchorage can be taken in a bight W of foul ground extending about 0.2 mile SW from Ile aux Prions, the largest islet, in the outer part of the inlet. The depths are 18m and the bottom is mud.

Port Fleuriais is a cove entered on the NW side of Baie de la Baleine and on the SE side of the isthmus, which connects Presqu'île Joffre with the mainland. Foul ground extends a short distance from Pointe Marcq, the E entrance point.

The cove provides the best anchorage in Baie de la Baleine, in 12 to 15m, being protected by high hills from the prevailing winds.

Baie de la Marne, the SW head of Baie de la Baleine, affords good anchorage in 11 to 22m, in its NW part; elsewhere, the depths are too great.

**Port Rosa** (49° 08'S., 69° 23'E.), entered on the NW side of Presqu'île Hoche, is a small cove affording anchorage, in 6 to 12m, with perfect shelter from all winds. The cove is open N, but is sheltered from that direction by the heights of Presqu'île Joffre.

Port Louison lies on the E side of Presqu'île Hoche. It provides good, safe anchorage, but is open to any swell that may fetch into Baie du Sondeur during E winds, and during W or SW winds the squalls are sometimes extremely violent.

**Anchorage.**—Anchorage can be obtained, in 25m, very sticky mud and good holding ground, 0.2 mile SSE of the E of three islets off the N side of Port Louison.

**13.17 Baie Keller** (49° 11'S., 69° 23'E.), which is deep, lies 1.3 miles SW of the SE extremity of Presqu'île Hoche. Anse Suffren and Baie Chanzy lie on the N and S sides of the inlet, respectively.

Good and well-protected anchorage can be obtained close E of the islet lying in mid-channel off the entrance of Anse Suffren and Baie Chanzy; a large vessel should moor, as this anchorage is restricted. A vessel proceeding to Baie Chanzy can pass on either side of this islet.

Anse Suffren provides excellent, but restricted anchorage, in 9 to 13m, good holding ground.

Baie Chanzy is deep, except on its W side, where good anchorage can be obtained. To reach the Anse Suffren

anchorage and that of Baie Chanzy coming from Baie du Sondeur, a vessel may either pass between Presqu'île Hoche and Iles du Passage, or pass between Ile du Port and Iles du Passage, then into Baie Keller, which is deep. In the second case, hug the W point of Ile du Port to avoid the dangers projecting SE from the E extremity of the easternmost of Iles du Passage.

Ile du Port, located at the WSW extremity of Golfe des Baleniers, is marked by two summits, the highest of which is 293m in the W part of the island.

**13.18 Baie Cachee** (49° 13'S., 69° 26'E.) lies 1.8 miles S of Baie Keller and W of Iles Borda, which lie S of Iles du Passage; it affords good anchorage, in 10m, in its middle.

Bassin de Boulogne lies on the N side of the narrow isthmus, Halage du Doris, which connects Presqu'île Fanny with the mainland. The entrance of the basin is only 90m wide and encumbered with kelp, but has a least depth of 5m. Within the basin there are depths of 8 to 20m, but a rock, awash, lies close off its S side.

Port d'Hiver lies between Presqu'île Carnot and Presqu'île Fanny. Pointe Laure lies on the N side of the harbor, 0.5 mile within the entrance. Ilot Py lies close off the N side of the harbor, 1.5 miles W of Pointe Laure. Ilot Guibon lies close off the S side of the harbor near its head.

**Anchorage.**—Good anchorage can be obtained, in 14.6m, mud, 0.7 mile WSW of the W extremity of Ilot Py, and E of the narrow entrance of a lagoon; this anchorage is known as Port de l'Eure.

There is another anchorage, in 18m, 0.4 mile S of the three islets off Pointe Laure.

Anchorage can also be obtained in the bight on the S side of the harbor, S of Ilot Py and E of Ilot Guibon.

The best approach to Port d'Hiver is by way of Baie du Hillsborough and Chenal du Chasseur. Petit Mont Ballon (49° 14'S., 69° 23'E.), bearing about 265°, leads up Chenal du Chasseur. If proceeding to the E anchorage, pass S of the three islets off Pointe Laure, but if proceeding to the inner anchorage, pass N of them. A vessel can proceed from Port d'Hiver to Baie Irlandaise by way of Passe Husker, but care is necessary to avoid the sunken rocks off its S entrance.

Baie Doumergue is the area between the E side of Ile du Port and Iles Challenger to the E. There are four anchorages in Baie Doumergue, but they are all more or less exposed to E winds. These anchorages each lie off a long stretch of sandy beach. One of them, Anse Risler, is entered 1.5 miles S of Cap Chabrilat, between Pointe Raoux and Pointe Bats. The S of these anchorages lies close SW of Pointe Marmite, the SE extremity of Ile du Port, and is protected on its S side by Ile Bellouard and Ile Colomban. This harbor was formerly used by seal hunters, and is the only one of the four anchorages which can be recommended.

Foul ground extends a short distance from the N and NW sides of Ile Bellouard, restricting the NE entrance to the anchorage to a width of 0.2 mile.

Baie du Hillsborough lies on the S side of Golfe des Baleiniers and is entered between Iles Challenger and Pointe du Chien (49° 15'S., 69° 51'E.), 7 miles E. There is no difficulty in approaching Baie du Hillsborough. Mont Campbell (49° 04'S., 70° 19'E.) and Sommet Cheminee (49° 12'S.,

70° 00'E.) are good landmarks. Iles Challenger, Roche du Chenal, Ile Henry, and the entrance to Chanal Clery are also easily distinguished.

Baie Irlandaise is entered between Cap Kersaint (49° 15'S., 69° 44'E.) and the E extremity of Ile du Canard, 3.5 miles WNW. It extends 12 miles W, separating Presqu'île Carnot from Presqu'île Bouquet de la Grye. Two groups of reefs are found in the middle of the E entrance to the bay. Passage can be effected either N or S of these dangers. Ile du Corbeau lies between Ile du Canard and the E extremity of Presqu'île Carnot.

During N winds, anchorage can be obtained, in 18m, off the SE side of Ile du Corbeau. Anchorage can also be obtained at the extreme head of the bay, but here the depths shoal very abruptly to the loose rocks brought down by the glacier W.

These anchorages, although they afford some protection, are not good, because of the violent squalls experienced and the bad holding ground.

Bras de la Fonderie is entered between Cap Allaire (49° 16'S., 69° 48'E.) and Cap Kersaint (49° 15'S., 69° 44'E.), about 1.5 miles W. On the NW side of the outer part are Port Pigeon and Port Couvreur, both of which afford protection from all winds.

Port Couvreur is entered between Pointe Poste, 0.3 miles S of Cap Kersaint, and Pointe des Trois Bergers, 0.5 mile farther S.

**Anchorage.**—Anchorage can be obtained in 22m, 0.2 mile E of Ile aux Canards, which lies close off the extremity of a small projection extending E from the head of the harbor.

A vessel anchored in 31m, 0.4 mile ESE of Pointe des Trois Bergers. She reported that this is the most sheltered anchorage in Iles Kerguelen and is capable of accommodating several vessels.

Large vessels may anchor, in about 30m, ESE of Pointe des Trois Bergers, with Ile des Trois Bergers bearing 305° and the E side of Ilot Mierry (49° 17'S., 69° 43'E.) bearing 205°.

**13.19 Bassin de la Gazelle** (49° 18'S., 69° 41'E.), probably the best harbor in Iles Kerguelen, is entered by a narrow channel S of Pointe Alnet. The entrance, which is scarcely visible until close to it, has depths of from 16.5 to 25.6m. A cairn on the N side, 3.4m high and painted black, is visible against a background of gray rocks from Bassin de la Gazelle.

Anchorage in Bassin de la Gazelle is presently prohibited (1974) because of the presence of mines.

**Directions.**—When entering Bras de la Fonderie, steer for Mont de la Valdivia, bearing 215°, which lies 1.3 miles S of Bassin de la Gazelle.

In clear weather, Pyramide Noire, 820m high, 12.5 miles SW of Mont de la Valdivia, will be seen just W of that mountain, when passing E of Roche du Chenal and Recif Bas. When 1 mile E of Recif Bas alter course so as to pass in mid-channel up Bras de la Fonderie. If proceeding to Bassin de la Gazelle, continue in mid-channel until abreast an islet lying N of the entrance, then steer gradually W and pass in mid-channel through the narrow entrance.

Baie du Beau Temps leads off generally W from the W part of Bassin de la Gazelle. Islets lie in about the middle of the connecting channels; depths of 12.8 to 16.4m can be followed through the channel, S of the islets. There is anchorage for two small vessels in Baie du Beau Temps, but N and NW winds

raise sufficient sea to be dangerous for boats. Rocks, awash, exist in several places.

Port Kirk and Anse de Vulcan are entered on the SE side of Baie du Hillsborough, between Cap Allaire and Pointe du Chien, 4.5 miles NE; both of these inlets are open to N winds.

Port Kirk is full of kelp, but contains no known dangers. There are depths of 18.3m, 1.5 miles within the entrance, and of 5.5m near its head.

In the middle of the entrance of Anse de Vulcan, there is a reef covered with kelp; the position of the reef is approximate. There are depths of 13m on each side of the reef. There is good anchorage, in 9 to 15m, within the reef, but it would be very unsafe when a N swell is running.

Port Elisabeth is entered on the E side of the entrance of Baie du Hillsborough, between Pointe du Chien and a point 0.7 mile ENE; it provides moderately safe anchorage. The harbor is narrow and accessible only to small vessels. The harbor is full of kelp, but anchorage can be obtained, in 5.8m, in the inner part of the harbor, 0.1 mile offshore, S of Mont Bayley.

Baie Bayley is entered on the NW side of Peninsula Courbet between Pointe de la Breche (49° 10'S., 69° 56'E.) and Pointe Mowbray, 1 mile farther NE. Pointe de la Breche has a conspicuous fissure visible from the W. This bay has not been thoroughly examined, but anchorage can be obtained in 15m, with the W entrance point bearing 300°, and the E entrance point bearing 015°.

Baie Charrier is entered between a point 1.5 miles ENE of Cap Daniel (49° 08'S., 69° 58'E.) and Cap Listenois, 1.3 miles farther NE.

A small vessel might anchor, with favorable winds, in Baie Charrier. Baie Charrier may be approached from the NE, either by proceeding midway between Iles Kent and Roches du Desespoir, or by a route sufficiently S of the latter to avoid a rocky shelf extending from them. A course of 143°, passing SW of a conspicuous rock, leads into the bay.

**Anchorage.**—Anchorage can be taken, in 6m, with Ilot Cagne bearing 288°, the conspicuous rock bearing 338°, and Ilot Abbot bearing 000°.

Baie Accessible is entered between Pointe Scott (49° 06'S., 70° 06'E.) and Cap de Chartres, 6 miles farther ENE. This bay contains two moderately secure anchorages, one in Baie des Cascades, in its SW part, and the other in Anse Betsy, in its SE part.

Baie des Cascades affords anchorage, in 11 to 37m, but is open to NE winds, which send in a heavy swell. Anse Betsy lies on the W side of the SE part of Baie Accessible.

**13.20** Between **Cap Digby** (49° 05'S., 70° 32'E.) and Cap Sandwich, 5.8 miles S, there is a bay on the E side of Peninsula Courbet. This bay is full of kelp, but during W winds, anchorage is available in 25 to 30m, 2 miles S of Cap Digby and 4 miles ESE of Mont Bungay.

Baie Norvegienne is entered between Pointe Morne (49° 22'S., 70° 27'E.) and Pointe Suzanne, 3.5 miles S. This bay is full of kelp, however; the best anchorage is 0.3 mile SSW of Pointe Morne, but care should be taken to avoid a sunken reef lying close inshore, 0.8 mile W of the point.

During W winds, a vessel may anchor on the alignments of the summits of Mont Peeper and Mont Bungay, good holding ground, about 1.4 miles from Pointe Morne.

Baie du Morbihan lies mainly between Peninsula Courbet and Presquile Ronarc'h to the S. The SW part of this area is taken up by an archipelago of flat-topped islands of various sizes. Passages between the islands are usually deep.

Baie de l'Aurore-Australe is entered on the N side of Golfe du Morbihan, between Pointe Guite (49° 25'S., 70° 17'E.), 6.5 miles W of Pointe Suzanne, and Pointe Molloy, 8 miles farther WNW.

Range lights are exhibited from a pair of white beacons 1 mile N of Pointe Molloy. These lights, in line bearing 314.5°, lead to an anchorage, in 18m, located 0.6 mile SE of the front range light.

**13.21 Port-aux-Francais** (49° 21'S., 70° 13'E.) is a small inlet in the middle of the coast between Pointe Guite and Pointe Malloy. A conspicuous church stands 0.6 mile W of the head of the inlet.

**Directions.**—The E side of Baie de l'Aurore-Australe is encumbered by kelp which extends 1.5 miles SW from Ilot Channer, but the anchorages can be approached, in depths from 37 to 27m and clear of all known dangers, by steering for Pointe de l'Epave, 2.3 miles ENE of Pointe Molloy, bearing 000° until the range beacons come into sight, having regard to a rock, awash, which lies 0.7 mile S of that point.

Two lighted beacons are located on the SE shore near the head of the inlet. The light beacons, in line bearing 058°, mark the approach to the anchorage. The lighted beacons on the NW shore, in line bearing 329°, indicate the most favorable position for anchoring.

**Anchorage.**—Anchorage may be obtained, in 27m, black basaltic sand bottom, good holding ground, on the alignment of two pairs of lighted range beacons, bearing 058° and 329°. Two radio masts, each 72m high, conspicuous and marked by a quick flashing white light, stand 0.7 mile NE and 1 mile NNE of the front beacon of the E pair of the range beacons.

Ile Murray, marked by a light, is the largest of several islands lying off the NE shore of Presquile Ronarc'h. A large vessel can anchor with sufficient maneuvering room about 1 mile E or NE of the island. A vessel is sheltered here from the W swell.

**13.22 Port Navalo** (49° 30'S., 70° 13'E.) is located within a number of islands lying off the N side of Presquile Ronarc'h and is one of the best anchorages in Iles Kerguelen. It is convenient for a vessel arriving off the entrance of Passe Royale in the evening and not wishing to proceed farther in before daylight.

**Anchorage.**—A vessel anchored midway between two fields of kelp in 22 to 26m, bottom of black mud good holding ground, with the lighthouse on Ile Murray bearing 085°, distant about 1 mile, and Pain de Sucre (49° 33'S., 70° 15'E.) bearing 174°. A strong W gale was experienced here without dragging. Anchorage, in depths of about 26m, may be obtained on the W side of the harbor 0.3 mile E and 0.5 mile NE of Ilot Sharbau.

**Directions.**—The best approach to Port Navalo appears to be from the N between Ile de l'Antares and Ilot Boyle, about 1 mile W. Approaching the harbor from Passe Royale, a vessel passed in a least depth of 20m 0.2 mile W of Ile de l'Antares. The vessel then steered for Pain de Sucre until clear of the kelp extending from Ile de l'Antares, when it altered course towards Ile Murray, passing between the fields of kelp extending from

Ile de l'Antares and from Presqu'île Ronarch. These two fields of kelp are separated by a clear space more than 0.5 mile wide from N to S.

**Caution.**—A depth of 8m lies about 5 miles E of Cap de la Geologie, the NE extremity of Presqu'île Ronarch.

**13.23 Port des Iles** (49° 28'S., 70° 04'E.) lies in the central part of Baie du Morbihan, 11 miles within the entrance. It is a well-protected anchorage formed between a group of four islands. Except for the channel from the SW, between Ile du Cochon and Ile du Cimetiere, which is shallow and blocked with kelp, the channels leading into the harbor are safe and deep, the dangers being marked by kelp.

**Baie de l'Observatoire** (49° 25'S., 69° 54'E.) lies 7 miles WNW of Port des Iles. It is a narrow inlet 1 mile long, with depths from 7 to 16m, black sticky mud and excellent holding ground. Two vessels rode out numerous gales in this anchorage, and also in Baie Supply, similar to Baie de l'Observatoire, and lying WSW of the W end of Ile Longue.

**Port Jeanne d'Arc** (49° 32'S., 69° 49'E.) lies on the S side of Chenal de Port Jeanne d'Arc, 7.5 miles WNW of the SE extremity of Ile Longue. On a plateau 2.3 miles W of the port is Le Dome Rouge, a conspicuous reddish-colored mountain, 350m high.

**Anchorage.**—Anchorage can be obtained in any part of the harbor, but the holding ground is not good, and a vessel should keep main engines ready in bad weather. The holding ground appears to be better near the S side than near Ile Longue. Squalls, with wind speeds reaching as much as 78 knots, have been reported at Port Jeanne d'Arc.

**Directions.**—The safest route into Golfe du Morbihan from seaward, for vessels with a draft of less than 20m, passes about 1 mile S of Roche Harston. From a position between that rock and Roche Balfour, make good a course of 270° for the N end of Ile Suhm. When the entrance range bears 314.5°, change course to that bearing.

If proceeding to Port des Iles, pass N of Ile Haynes, which lies about 1 mile NW of the N extremity of Ile Suhm. From the entrance of Golfe du Morbihan to Port des Iles, the depths vary from 28 to 56m; within Port des Iles, the depths are irregular.

If proceeding to Baie de l'Observatoire or Port Jeanne d'Arc, pass midway between Ile Haynes and Ile Suhm. If proceeding to Baie de l'Observatoire, pass S of Ile du Cimetiere, then N of Ile Greak, Ile Penn, and Ile Mayes. If proceeding to Port Jeanne d'Arc, steer through Passe de l'Hydrographie, then round the E end of Ile Longue, taking care to avoid Roches du Dr-Green, as well as the shoals lying off the E end of Ile Longue.

**13.24 Port du Ketch** (49° 29'S., 69° 54'E.) lies between the SE extremity of Ile Australia and Ile du Chateau; it affords anchorage in 16.4m. Bras Bolinder is the W bay formed between Presqu'île Ronarch'h and Presqu'île Jeanne d'Arc.

Baie Greenland is entered between **Mac Lear** (Cap Maclear) (49° 38'S., 70° 17'E.) and the NE side of Presqu'île Jeanne d'Arc, 2.5 miles SW. Cap Mac Lear is a useful mark when approaching Iles Kerguelen from the S.

**Anchorage.**—Anchorage can be obtained in the middle of the bay, but kelp should be avoided. The bay is subject to sudden violent squalls. The S side of Iles Kerguelen is as well-

sheltered as the E side from the prevailing W winds, at least during the S hemisphere summer.

**Cap du Challenger** (49° 44'S., 70° 05'E.) is a ragged point, with two pinnacle rocks of considerable height close to its extremity.

Baie des Swains is entered between Cap Alphonse Rio (49° 39'S., 69° 38'E.) and the SW extremity of Presqu'île Jeanne d'Arc, 6.8 miles E.

Anse du Volage, the E arm at the head of Baie des Swains, affords good and secure anchorage, in 18m or less, soft mud.

Baie d'Audierne is entered between Pointe de Penmarch (49° 37'S., 69° 25'E.) and Cap Dauphin, 15 miles WSW. Because of Roche Andre (49° 40'S., 69° 14'E.) and the other dangers in the bay, it should be approached with great caution. The dangers are in such an exposed position that the existence of kelp over them cannot be relied upon.

Fjord Larose is the E recess at the head of Baie d'Audierne.

**Anchorage.**—Anchorage can be obtained in 9m, near the head of Fjord Larose, 3 miles NW of Doigt de Ste. Anne (49° 34'S., 69° 23'E.), but it is restricted and difficult to access.

**Directions.**—If proceeding to Anse du Volage, pass between the SW entrance point of Anse aux Ecueils and Ile Leon Lefevre, which lies close SE of it, and then between the NE entrance point of the same bay and the islands lying NE of Ile Leon Lefevre. The least depth found was in the narrows between Ile Leon Lefevre and the peninsula, 75m high, NW, was a depth of 22m in mid-channel and 16.5m close to the kelp.

**13.25 Baie de la Table** is entered between Pointe de l'Océanographie (49° 36'S., 69° 14'E.) and the S of Ilots Joubin, 2.5 miles E. There are several good anchorages in Baie de la Table, but great caution is necessary because of the islets and sunken rocks on both sides of the entrance and the fairway between, which is about 1.3 miles wide.

A vessel may anchor, in 35m, at the head of Baie de la Table off the entrance of a fjord named Portes Noires.

Baie de la Mouche is entered 3.8 miles N of Cap Dauphin. Anchorage can be obtained, in 9 to 25m, at the entrance or farther in at Port du Sprightly, a cove on the E side of Baie de la Mouche, 1.8 miles within the entrance, but it is not recommended. Fierce N squalls are experienced here at times.

**Cap Dauphin** (49° 41'S., 69° 03'E.) rises steeply to Mont de Volz. Anse du Gros Ventre lies about 5.5 miles WSW of Cap Dauphin. A vessel has anchored in this cove.

**Cap Bourbon** (49° 43'S., 68° 47'E.), the SW extremity of Iles Kerguelen, is low but rises to Pic St. Allouarn.

**13.26 Port de l'Enfer** (49° 31'S., 68° 51'E.) consists of a cave in the face of a cliff, the entrance of which is 30m high and shows up like a gateway. To the S of Port de l'Enfer, at elevations varying from sea level to over 213m, many jets of steam, issuing from hot springs, have been observed. The shore should not be approached closer than 5 miles between Cap Bourbon and Port de l'Enfer.

Baie Bretonne is entered between Port de l'Enfer and Cap Louis (49° 21'S., 68° 39'E.), 10.8 miles NW. Baie du Loon, 3.5 miles E of Cap Louis, affords excellent anchorage, free from kelp, in 18m, in its NE corner. There is a sunken rock 0.3 mile W of the W entrance, which is the only navigable entrance.



Anse Mallet is entered midway along the W side of Ile de l'Ouest. There are depths of 37m in the entrance and 7.3m near its head. Good anchorage can be obtained, in 22m, halfway up the inlet.

Anse du Monument lies on the N side of Ile de l'Ouest, 2.8 miles E of Cap Rosnevet and is very small, but has a depth of 14.6m. Foul ground extends a short distance from the W entrance point. The monolith formation, from which the cove derives its name, is very impressive.

Anse du Duncan is entered 0.8 mile SE of Cap de l'Abri (49° 20'S., 68° 47'E.), the NE extremity of Ile de l'Ouest and on the W side of the N approach to Detroit de la Marianne. Good anchorage can be obtained, in 12 to 13m, sand, good holding ground, 0.4 mile from the head of Anse du Duncan. Attention should be paid to the rocks in the entrance approaches.

Detroit de la Marianne, the central part of which is known as Port Curieuse (49° 22'S., 68° 49'E.), lies between Ile de l'Ouest and the mainland E.

Detroit de la Marianne is sheltered from all winds and is the warmest place on the W side of Iles Kerguelen. Outside the strait the cold is usually intense, especially when the wind blows off Glacier Cook.

Small vessels can obtain anchorage in Port Curieuse, but the channel is often encumbered with ice which has calved from the numerous glaciers which descend to the coast in this vicinity.

The tidal currents in the N entrance are very strong, setting S during the rising tide and N during the falling tide.

About 0.5 mile S of the N entrance, the strait contracts to a width of only 15m. Within a depth of 22m and when approaching the entrance from the N, it is difficult to make out. The broken water over Roche Loranchet can be seen as the strait is approached.

The fairway through the S entrance is 0.2 mile wide and safe, with depths of 26 to 35m. The sea breaks heavily over the dangers on both sides.

Secure anchorage, with good holding ground, can be obtained in 31m, sand, in the middle of the strait, 0.4 mile S of the narrows. The anchorage is well-sheltered from all winds.

Baie Francaise is the extensive bight between Cap Rosnevet (49° 20'S., 68° 43'E.) and Cap Bon Espoir, 6.5 miles NE. At its head are Baie du Tonnerre and Anse de Quiberon.

**Baie du Tonnerre** (49° 20'S., 68° 53'E.) is entered between Pointe Richard, 2.3 miles E of Cap l'Abri, and Pointe Berger, 0.8 mile N of Pointe Richard. A reef, the outer part of which is sunken, extends 0.5 mile N from Pointe Richard, leaving a narrow passage, with a least depth of 8m, leading into the harbor.

**Anchorage.**—Anchorage can be obtained, in 18 to 42m, 0.5 mile within the entrance and close off the N side of the harbor. This anchorage is partly protected by the reef extending N from Pointe Richard, but the prevailing W winds and ice calving from the glaciers render it insecure.

**13.27 Anse de Quiberon** (49° 16'S., 68° 54'E.) is entered between a point which rises to Les Deux Cones, 2 miles SE of Cap Bon Espoir, and a point 2 miles farther SSE. This bay is open to the prevailing W winds and can therefore hardly be considered a safe anchorage. Foul ground extends 0.5 mile off the N entrance point and an islet and a submerged rock lie

close off its S entrance point. Submerged rocks lie close off the N side of the bay in places, and an above-water rock lies close off its head.

**13.28 Crique du Sac a Plomb** (49° 15'S., 68° 54'E.), an almost circular basin, is entered on the N side of Anse de Quiberon by way of a very narrow channel. In the middle of the entrance of this channel is a rock, on which the sea breaks, and which should be left on the starboard hand when entering. Anchorage can be obtained, in 18 to 27m, mud, off the head of Crique du Sac a Plomb.

Baie Invisible is entered 1 mile S of Pointe Pages (49° 10'S., 68° 48'E.). The entrance of this bay consists of a very narrow break in the cliffs, quite indistinguishable by a stranger, but within, the bay opens out into a considerable basin. Good anchorage can be obtained in 47m, a short distance S of a stream. The swell in the entrance is frequently very heavy.

Baie de l'African, which has not been closely examined, is entered between Pointe Pages and Pointe de Tromelin, 1.2 miles NNE. Anse du Cirque, on the S side of the bay, affords excellent anchorage in 20 to 26m. The SE arm of Baie de l'African is open W and, though the holding ground is good, it is not recommended as an anchorage. Riviere Penfeld, the NE arm, though well-sheltered, affords only restricted anchorage in 47 to 55m, mud, at its extreme head. Anse du Cirque is the best anchorage in Baie de l'African.

Baie de Benodet is entered 2.5 miles SE of Cap Marigny (49° 06'S., 68° 46'E.). This bay affords anchorage, with excellent shelter, in 30m. Vessels entering the bay should pass E of a chain of reefs lying about 1 mile SW of the entrance.

**Caution.**—A danger area, 1.7 miles wide and 2 miles long, is centered 2.5 miles SW of Cap Marigny.

Baie Inconnue is entered N of Pointe Farman (49° 02'S., 68° 48'E.). The entrance is about 0.2 mile wide, but is encumbered with rocks; within, the bay opens out and provides anchorage in 20m, mud. The best anchorage is in 13m, mud, in a cove on the E side. The coast between this bay and Pointe du Cuir Sale (48° 58'S., 68° 51'E.) should be given a berth of at least 2 miles.

Baie Rocheuse, entered E of Pointe Bleriot (48° 58'S., 68° 52'E.), trends S for 3 miles and terminates at a sandy beach. Anchorage off the beach is poor, but elsewhere in the bay it is good, if kelp be avoided. The best berth is in 20m, halfway up the bay and nearer its W side; there is a rock, awash, a short distance E of this anchorage.

## Ile Saint-Paul and Ile Amsterdam

**13.29 Ile Saint-Paul** (38° 43'S., 77° 33'E.) and **Ile Amsterdam** (37° 50'S., 77° 30'E.), two isolated islands of volcanic origin, are French possessions. From April to October, they should be approached with great caution as strong W winds are then prevalent. As the islands steep-to, sounding gives little warning when approaching in thick weather. There are no known dangers more than 0.2 mile offshore.

These islands have been declared sanctuaries for the preservation of all forms of wildlife.

**13.30 Ile Saint-Paul** (38° 43'S., 77° 33'E.) attains an elevation of 271m and a considerable part of its area is occupied by a circular basin, formed by the crater of an extinct volcano. The NE side of the crater has broken down. In clear weather, Ile Saint-Paul is visible from a distance of 60 miles.

There are no trees on the island, but it is covered with grass and bushes, the latter sometimes being 2.1m high. Rocher Quille (Ninepin Rock), a formation of lava in horizontal layers, lies on the NW side of the entrance of the basin. The island is visible in clear weather from 30 miles.

From April to October, the island should be approached with great caution as strong W winds are then prevalent. As the island is steep-to, soundings give little warning when approaching in thick weather. There are no known dangers more than 0.1 mile offshore.

**Winds—Weather.**—Winds from directions between the NE through N to NW raise a heavy sea in the vicinity of Ile Saint-Paul. Winds from directions between the NNW and NW blow parallel with the NE shore of the island, and vessels can lie in safety at the anchorage NNE of the entrance to the basin.

With SW winds, terrific squalls blowing down the sides of the crater appear to alternate with sudden calms, these often abrupt alternations are very dangerous.

Squalls from the SE are rare, but if one comes a vessel should put to sea immediately. Ile Saint-Paul is too small to provide much shelter from W squalls to vessels moored off its NE shore.

**Tides—Currents.**—Nearly 1 mile off the NE side of Ile Saint-Paul, the flood current sets NW from LW to 2 hours after HW, or for 8 hours, and the ebb current sets SE from 2 hours after HW to LW.

About 0.4 mile off the NE side of the island, the flood current sets SSE from LW to HW and the ebb current sets NNW from HW to LW; the currents attain a velocity of 1 knot at springs.

**Anchorage.**—There is anchorage off the basin entrance with Rocher Quille bearing 282°, distant almost 0.3 mile, in depths of 23 to 32m. Anchorage is also available with Rocher Quille bearing 322°, distant 0.4 mile, in depths of 12 to 17m. A better berth, most frequently used except during E winds, is 0.3 to 0.4 mile E of Rocher Quille, in depths of 23 to 30m, black sand, good holding ground. A vessel anchored, without dragging, during 45 knot winds from the SSE, with Pointe Smith (Schmith Point), the NW extremity, bearing 065°, distant 0.4 mile. Anchorage should not be taken in any position in which Rocher du Milieu or Ilot Nord is shut in or open W of Rocher Quille.

**13.31 Ile Amsterdam** (37° 51'S., 77° 33'E) has a verdant aspect. It is said to be visible up to 60 miles.

From April to October, the island should be approached with great caution, as strong W winds are then prevalent. As the island is steep-to, soundings give little warning when approaching in thick weather. There are no known dangers more than 0.1 mile offshore.

Pointe d'Entrecasteaux, on the W side, 2.5 miles NW of Pointe Vlamming, the S extremity, is conspicuous because of its pointed summit and jagged edges. Pointe Vlamming, when bearing 112°, appears as a precipitous bluff. The coasts of the island are generally free of dangers, except near the points, which are bordered by breakers; a rock lies about 0.2 mile offshore about 1 mile S of the NW extremity of the island. Above-water rocks lie 1.7 miles SSE of the NE extremity of the island; the existence of these rocks is doubtful.

A meteorological station, with a flagstaff, is permanently established close SW of Pointe Hosken (37° 49'S., 77° 35'E.), the NE extremity of the island. Between the station and Pointe Goodenough to the W, is Chaussee des Otaries, the only beach on the island.

**Winds—Weather.**—The prevailing wind is from the W.

**Tides—Currents.**—The tidal currents are strong off the coast, and vessels seldom lie head to the wind.

**Anchorage.**—The anchorages off Ile Amsterdam are temporary only.

The safest anchorage, known as Mouillage du Ribault (Mouillage du Pingouin), is 0.7 mile SE of Pointe Hosken, in depths from 25 to 40m, good holding ground of black sand.

A vessel should anchor 0.3 mile offshore on the alignment of two beacons with white daymarks, from which lights are occasionally exhibited bearing 244°, and with a pointed above-water rock in line with the extremity of a conspicuous landslide, bearing 171°.

Northward of the meteorological station, Mouillage du Gonio has depths of 35m, fair holding ground. A vessel anchors on the alignment of two beacons with white daymarks, from which lights are occasionally exhibited, bearing 224.5° and with the flagstaff bearing 165°.

There is good temporary anchorage, sheltered from N winds, 0.3 mile off the SE coast of the island, in 25 to 31m, good holding ground, with Pointe Vlamming bearing 255°, distant 1.2 miles.

Anchorage is available by day off Pointe Eboulement (37° 50'S., 77° 36'E.), about 1.3 miles SSE of Pointe Hosken, with Pointe Eboulement Cliff and a pointed black rock, in line bearing 170°. This anchorage is available to vessels with a maximum length of 130m. The current sets generally parallel with the coast, either NNW or SSE.

During N swells, a vessel may anchor in calm water, in 25 to 30m, good holding ground, about 1 mile S of the crater Le Fourneau, which rises nearly 0.8 mile WSW of Cap Novara (37° 52'S., 77° 36'E.).